

6.0 ENGINEERING SYSTEMS REQUIREMENTS

G20 SITE IMPROVEMENTS

SYSTEM DESCRIPTION

The site improvements system consists of pavements, pavement related features, landscaping, and other exterior site development work related to this project. Pavement design shall be performed by a licensed Professional Engineer familiar with conditions local to the project site.

GENERAL SYSTEMS REQUIREMENTS

Provide site improvements as required to make a useable facility that meets functional and operational requirements, incorporates all applicable anti-terrorism, force protection and physical security requirements and blends into the existing environment.

Provide site improvements in conformance with applicable requirements of the Uniform Federal Accessibility Standards.

Identify and obtain all permits to comply with all federal, state, and local regulatory requirements associated with this work. The Contractor shall complete the "Permits Record of Decision" (PROD) form with the first design submittal package. A blank PROD form can be obtained at the Download Tab of Part 6 of the NAVFAC Design-Build website at the following link

<http://www.wbdg.org/ndbm/Download/DownAdditional.html?Section=AdditionalInfo>. Contractor shall determine correct permit fees and pay said fees. Copies of all permits, permit applications, and the completed PROD form shall be forwarded to the Government's Civil Reviewer.

Provide improvements as required to conform to all applicable anti-terrorism and physical security requirements.

Minimize the impact of construction activity on operations and neighboring facilities.

Locate new site improvements at locations indicated on the drawings in another part of this RFP. If specific locations are not provided, site the improvements to develop appropriate and positive relationships with other facilities and to conform to existing development patterns.

Refer to Site Analysis and Building Requirements Sections for additional site improvement functional program information.

G2010 ROADWAYS

Unless otherwise noted, roadways shall be installed as indicated on the drawings in Part 6 of this RFP.

Provide roadways, as required, to allow for safe, convenient and logical circulation, while discouraging through traffic. The design of pavements shall take into consideration the anticipated daily traffic over the life of the project as well as the existing soil conditions at the site.

Provide roadways of bituminous pavement where indicated on the drawings in Part 6 of this RFP.

Provide other roadway improvements including pavement markings and signage.

G201001 BASES & SUBBASES

Bases and sub-bases shall be installed as required for this project.

Crushed concrete meeting the specified gradation for aggregate base or sub-base courses may not be used.

G201002 CURBS & GUTTERS

Provide curb and gutter as directed for parking, drive areas, and stormwater conveyance.

G201003 PAVED SURFACES

Unless otherwise noted, paved surfaces shall be installed as indicated on the drawings in Part 6 of this RFP.

G201004 MARKING & SIGNAGE

Unless otherwise noted, marking and signage shall be installed as indicated on the drawings in Part 6 of this RFP.

Provide pavement markings in accordance with VDOT standards.

Provide signage in accordance with the Manual on Uniform Traffic Control Devices (MUTCD) and the MCB Quantico BEAP.

Provide temporary pavement markings and signage throughout construction to meet phasing requirements indicated in the project program. Provide temporary signage in accordance with the MUTCD.

G201005 GUARDRAILS & BARRIERS

Unless otherwise noted, guardrails and barriers shall be installed as indicated on the drawings in Part 6 of this RFP.

Provide wheel stops and bollards in accordance with the UFC 3-200-01, *Civil Engineering*.

G202006 RESURFACING

Not Used

G201090 OTHER ROADWAYS

Provide a plaza that is approximately 200x75 feet in size to accommodate 300 people in formation. The plaza will be stamped concrete and shall be designed for AASHTO HS20 loading for emergency access. Ceremonies such as changes in command and welcoming of dignitaries will take place on the plaza. The plaza will serve as the central access from the security turnstiles in the front of the building to the front door. Utilize a change in stamped pattern and color to delineate the central access used for daily use. Reinforce with welded wire mesh and rebar reinforcement based on the recommendations of the Designer of Record. Select concrete with a color, cast into the mixture, and a pattern as selected by the Designer of Record to complement the building architecture and provide clear delineation of the space.

G2020 PARKING LOTS

Unless otherwise noted, parking lots shall be installed as indicated on the drawings in Part 6 of this RFP.

Provide parking for a minimum 120 vehicles. The design of pavements shall take into consideration the anticipated daily traffic over the life of the project as well as the existing soil conditions at the site.

Provide parking lots of bituminous pavement. Gravel pavement may not be used. Porous pavement shall not be used.

Provide pavement markings and signage.

Provide handicapped parking in accordance with the Uniform Federal Accessibility Standards for six (6) vehicles.

G202001 BASES & SUBBASES

Bases and sub-bases shall be installed as required for this project

Crushed concrete meeting specified gradation for aggregate base or sub-base courses may not be used.

G202002 CURBS & GUTTERS

Provide curb and gutter as directed for parking, drive areas, and stormwater conveyance.

G202003 PAVED SURFACES

Unless otherwise noted, paved surfaces shall be installed as indicated on the drawings in Part 6 of this RFP.

G202004 MARKING & SIGNAGE

Unless otherwise noted, marking and signage shall be installed as indicated on the drawings in Part 6 of this RFP.

Provide pavement markings in accordance with VDOT standards.

Provide signage in accordance with the MUTCD and the MCB Quantico BEAP.

Provide temporary pavement markings and signage throughout construction to meet phasing requirements indicated in the project program. Provide temporary signage in accordance with the MUTCD.

G202005 GUARDRAILS & BARRIERS

Unless otherwise noted, guardrails, and barriers shall be installed as indicated on the drawings in Part 6 of this RFP.

Provide bollards in accordance with the UFC 3-200-01, *Civil Engineering*.

G202006 RESURFACING

Not Used

G202007 MISCELLANEOUS STRUCTURES AND EQUIPMENT

Not Used

G202090 OTHER PARKING LOTS

Not Used

G2030 PEDESTRIAN PAVING

Unless otherwise noted pedestrian paving shall be installed as indicated on the drawings in Part 6 of this RFP.

Provide a network of Portland cement concrete sidewalks, separated from, but connected to vehicular circulation systems, to allow pedestrian circulation between various elements of the project.

G203001 BASES & SUBBASES

Bases and sub-bases shall be installed as required for this project

Crushed concrete meeting specified gradation for aggregate base or sub-base courses may not be used.

G203002 CURBS & GUTTERS

Provide curb and gutter as directed for parking, drive areas, and stormwater conveyance.

G203003 PAVED SURFACES

Unless otherwise noted paved surfaces shall be installed as indicated on the drawings in Part 6 of this RFP.

G203004 GUARDRAILS & BARRIERS

Unless otherwise noted, guardrails, and barriers shall be installed as indicated on the drawings in Part 6 of this RFP.

G203005 RESURFACING

Not Used

G203006 OTHER WALKS, STEPS & TERRACES

Not Used

G2040 SITE DEVELOPMENT

G204001 FENCING & GATES

Unless otherwise noted, fencing and gates shall be installed as indicated on the drawings in Part 6 of this RFP.

Provide an ornamental fence of wrought iron and locate as indicated on the drawings in Part 6 of this RFP. Fencing to match existing, adjacent structures in type, style and height.

Provide fencing and gates in accordance with the UFC 4-022-03, *Security Fences and Gates*.

G204002 RETAINING AND FREESTANDING WALLS

Unless otherwise noted, a retaining walls and freestanding walls shall be installed as indicated on the drawings in Part 6 of this RFP.

G204003 EXTERIOR FURNISHINGS

All site furnishings shall conform to the MCB Quantico's Base Exterior Architectural Plan (BEAP) and FC 4-721-10N, *Navy and Marine Corps Unaccompanied Housing*. Provide BEQ picnic and barbeque furnishings for 5% of resident capacity. Provide picnic tables, trash receptacles, benches, barbecues, recycling receptacles, and hot ash receptacles as required. At a minimum, provide a trash and ash receptacle at the designated smoking area.

G204004 SECURITY STRUCTURES

Unless otherwise noted, security structures shall be installed as indicated on the drawings in Part 6 of this RFP.

Provide a passive barrier system, fencing, and gates.

G204005 SIGNAGE

Provide signage in accordance with the Activity's BEAP and the Installation and Appearance Guide.

Unless otherwise noted, signage shall be installed as indicated on the drawings in Part 6 of this RFP.

G204006 FOUNTAINS & POOLS

Not Used

G204007 PLAYING FIELDS

Provide an approximately 6000 sf training facility for hand-to-hand combat and other training. The training facility is made up of two (2) rubber mulch areas and an artificial turf area. Both surfaces are to have a 6-inch aggregate base over compacted grade. The Designer of Record shall utilize geotechnical reports to ensure that the base drains at an acceptable rate. If not, utilize a 4-inch perforated pipe below the aggregate base. Wrap the pipe in filter fabric and place in an 8-inch aggregate trenches 25' on-center. Utilize an aggregate for the base and drainage that allows water to pass through. Daylight the

pipes to drain or tie them into the building manifold system or nearby storm drain. Separate aggregate base and surfacing with geotextile fabric. Stake fabric in. For the rubber mulch, provide an average 8" depth or greater as recommended by Certified Playground Safety Inspector's (CPSI) recommendation based on fall heights and usage. Rubber mulch shall be high quality recommended for playground use. For artificial turf, utilize a synthetic product designed for playground use. Provide base depths of foam rubber or recycled rubber backfill as recommended by Certified Playground Safety Inspector's (CPSI) recommendation based on fall heights and usage. The surfaces shall be separated by concrete sidewalks. See drawings in Part 6 of this RFP.

G204008 TERRACE AND PERIMETER WALLS

Not Used

G204009 FLAGPOLES

Provide one (1) 20-foot commercial grade aluminum flagpole near the main entrance to the building as indicated on the drawings in Part 6 of this RFP.

G204090 OTHER SITE IMPROVEMENTS

Unless otherwise noted, site improvements shall be installed as indicated on the drawings in Part 6 of this RFP.

Provide portland cement dumpster pads and brick enclosures for trash and recycling. Provide double metal gate with self-closing mechanism for each dumpster pad.

Provide one (1) portland cement sidewalk slab immediately east of the athletic training area.

Provide a large impervious parade ground in front of the BEQ building.

G2050 LANDSCAPING

Provide complete landscaping consisting of lawn, groundcover, trees, shrubs, perennials and ornamental grasses as required to provide a quality, cost-effective, functional and visually appealing landscape program that will enhance the development, while complying with all applicable anti-terrorism, force protection and physical security requirements. Provide landscaping resistant to deer.

Provide shrubs or small growing trees for screening of mechanical equipment/wall and other obstructions that do not present an aesthetic view from the street.

G205001 FINE GRADING AND SOIL PREPARATION

Provide 4" of topsoil for all grass areas and other pervious areas disturbed by Contractor operations.

G205002 EROSION CONTROL MEASURES

Prevent erosion from occurring by providing erosion control measures as required by city, state and federal requirements.

G205003 TOPSOIL AND PLANTING BEDS

Not Used

G205004 SEEDING SPRIGGING AND SODDING

Provide seed and fertilize existing grass areas disturbed by Contractor operations.

G205005 PLANTINGS

Not Used

G205006 PLANTERS

Not Used

G205007 IRRIGATION SYSTEMS

Provide temporary irrigation system to irrigate adequately all grass and landscaped areas until established.

G205090 OTHER LANDSCAPING

Not Used

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